

Systemic Safety Implementation Peer Exchange

September 15 and 16, 2015

Nashville, Tennessee

Summary Report

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List of Acronyms

AADT	average annual daily traffic
AASHTO	American Association of State Highway and Transportation Officials
ALDOT	Alabama Department of Transportation
CARE	Critical Analysis Reporting Environment
CLRS	center line rumble strip
CRF	critical rate factor
EDC	Every Day Counts
FHWA	Federal Highway Administration
GRPC	Gulf Regional Planning Commission
HFST	high friction surface treatments
HSIP	highway safety improvement programs
HSM	Highway Safety Manual
IHSDM	Interactive Highway Safety Design Model
ITS	intelligent transportation systems
KYTC	Kentucky Transportation Cabinet
MDOT	Mississippi Department of Transportation
MOU	memorandum of understanding
MPO	metropolitan planning organization
NJTPA	North Jersey Transportation Planning Authority
RFP	request for proposal
ROW	right-of-way
RSA	road safety audit
RwD	roadway departure
SHA	State Highway Administration
SHSP	strategic highway safety plan
SPF	safety performance function
STP	State Transportation Plan
TDOT	Tennessee Department of Transportation
TZD	toward zero deaths
usRAP	United State Roadway Assessment Program

INTRODUCTION

The systemic approach to safety involves the use of countermeasures that are widely implemented based on high-risk roadway features correlated with particular severe crash types. Data shows that a majority of fatal crashes occur on rural roads. However, these crashes are scattered across the many miles of rural roadways, making it difficult to isolate high-crash locations for safety improvements. The systemic approach is a proactive technique that helps agencies broaden their safety efforts and consider risk as well as crash history when identifying where to implement low-cost safety improvements.

To assist agencies with advancing the implementation of the systemic approach, especially at the local level, the Federal Highway Administration (FHWA) Office of Safety hosted a Systemic Safety Implementation Peer Exchange on September 15 and 16, 2015, in Nashville, Tennessee. The peer exchange provided a forum for participants to discuss and exchange ideas on applying systemic safety analyses, how their agencies are implementing a systemic safety program, and on the systemic safety countermeasures being used.

Fifty-six attendees participated in the peer exchange, including Federal, State, and local representatives from Alabama, Florida, Kentucky, Maine, Maryland, Mississippi, New Jersey, Pennsylvania, Puerto Rico, and Tennessee. The peer exchange was formatted to provide a mix of presentations, facilitated roundtable discussions, and breakout sessions. This structure provided attendees with several opportunities to collect information from their peers and to examine different ways to advance the implementation of systemic safety. Representatives from each State shared their noteworthy practices and strategies as well as the challenges and barriers they experienced in applying the systemic approach to safety.

Each State delegation spent time developing Action Plans at the end of the peer exchange. A virtual peer exchange will be coordinated in approximately 2 years to follow up with attendees on their progress.

KEY TAKEAWAYS

Attendees identified the following key takeaways from the peer exchange.

- To be effective, state agencies and regional planning bodies need to work closely to exchange data with local agencies to develop and keep local partners, find and develop champions, communicate available resources, work together, and find ways to get more Federal funds to these agencies.
- A potential tool for risk based safety analysis is the United State Roadway Assessment Program (usRAP) program. More information about the program can be found at <http://www.usrap.us/home/>.
- State agencies, regional planning bodies, and technical assistance programs can advance systemic safety by hosting workshops for low-cost safety improvements, providing guidance, providing training, and/or identifying funding for local agencies and jurisdictions, which also helps to build relationships with locals.
- There is a need to identify funding opportunities for local agencies by:
 - Reassessing different countermeasure costs and benefits,

- Revisiting how funds are allocated for local systemic activities and how funds are managed for local road safety improvement opportunities,
 - Considering use of Highway Safety Improvement Program (HSIP) funds for systemic projects,
 - Using a priority list to allocate safety funds on capital projects, and
 - Considering providing funding to locals proportionate to the percentage of fatalities and serious injuries on their roadways.
- There is also a need for agencies to develop local road safety plans.

PEER EXCHANGE PROCEEDINGS – DAY 1

Welcoming Remarks

Tennessee Department of Transportation (TDOT) Director of the Strategic Transportation Investments Division Steve Allen welcomed the group to the peer exchange and provided opening remarks. In his address, Mr. Allen mentioned that safety is the number one priority at the department. He provided background information on how TDOT came to embrace the systemic approach and reiterated the agency's commitment to the toward zero deaths (TZD) goal. Mr. Allen summarized TDOT's experience with safety funding by noting that in the beginning the agency couldn't spend all of the safety funds available, but now they are having the opposite problem with not having enough money for projects. In this new environment, they prioritize each project based on need and then insert it into their overall program.

From a safety standpoint, TDOT started with a program goal of reducing the fatality rate by 10 percent. He noted that agencies shouldn't set up performance measures to fail, but should develop meaningful goals that the agency can accomplish. To achieve its goals, there needs to be time and money spent on getting crash data up to speed. Another important aspect of TDOT's program is partnering with the Governors Highway Safety Association educational programs to get the word out.

FHWA Assistant Division Administrator for Tennessee Sabrina David also provided opening remarks. Her message focused on the importance of safety-conscious planning and integrating safety into the long-range transportation planning process. She also pointed out that in the end, we all have to work collaboratively together.

After welcoming remarks, self-introductions were conducted. As attendees introduced themselves, they also stated their expectations for the peer exchange. A complete list of all peer exchange attendees is included in Appendix A. The following summarizes attendees' expectations:

- Connect with peers in other agencies dealing with similar safety issues.
- Learn what other States are doing with systemic safety, including successes and failures.
- Learn how other States are implementing their success stories.
- Learn how to apply systemic treatments cost effectively with site analysis.
- Learn more about the application of the systemic approach to pedestrian safety strategies.
- Learn how States are retrieving data along corridors.
- Learn how States are addressing roadway departure (RwD) crashes.

- Learn how to address systemic safety through strategic highway safety plans (SHSP) at both the policy and strategy level.
- Identify ways to prioritize projects.
- Identify what other local agencies are doing or other funding opportunities beyond highway safety improvement programs (HSIP).
- Learn how to educate local agencies.
- Learn how to apply the systemic safety approach to local roads—specifically, using low-cost strategies and actions.
- Learn how to work with tribes.
- Learn how to implement projects at the metropolitan planning organization (MPO)/regional level.
- Learn how others agencies are looking at data.
- Learn how to help local agencies with project development needs to level the playing field.
- Identify case studies and stories to share with others across the Nation.

Overview of the Systemic Approach to Safety

A systemic safety improvement is one that is widely implemented based on high-risk roadway features that are correlated with particular crash types. There is a difference between *systematic* and *systemic* safety.

- Systematic safety is deploying countermeasures everywhere – at all locations.
- Systemic safety is deploying countermeasures at locations with the greatest risk.

Some of the challenges associated with implementing the systemic safety approach include moving from a reactive to a proactive mindset and overcoming public and political resistance.

According to FHWA data, 57 percent of fatal crashes occur on rural roads.

When analyzing the road system, agencies must look at the system as a whole. For example, when deciding where to systemically install cable median barrier, an agency should review not only crashes, but also factors such as the median width, location of entrance ramps, and weather or climate.

The following systemic safety countermeasures have proven successful:

- Cable median barrier
- Rumble strips/stripes
- Edge line pavement markings
- Chevrons on curves
- Signal upgrades
- Countdown pedestrian indications

The following systemic safety countermeasures are trending and show promise:

- High friction surface treatments (HFST)
- Safety EdgeSM
- Wrong-way driving treatments
- Alternative intersection design

- Data (this is important; the more data an agency has, the better its decisions will be)
- Improved analysis tools

Gaps in systemic safety implementation include the following:

- Enforcement countermeasures
- Fewer signals
- Pedestrian/bicycle countermeasures
- Better roadway data
- Better crash data
- Public/political/management support

There are many benefits to the systemic approach to safety, including, but not limited to, the following:

- It is more proactive; systemic safety addresses locations at risk before a crash happens.
- It gives an agency better knowledge of the roadway system.
- It is a repeatable and defensible process.

FHWA has multiple resources available to support implementation of the systemic approach to safety, including a Systemic Safety Project Selection Tool, training, and technical assistance. FHWA also coordinates peer exchanges and webinars. FHWA's Every Day Counts (EDC) Data Driven Safety Analysis Initiative provides additional support to advance the systemic approach to safety.

Strategic highway safety plans are a great place to start your systemic safety analysis. FHWA-led Intersection and Roadway Departure Safety Implementation Plans are another valuable resource for systemic safety analysis. If you're looking for analysis tools, US Road Assessment Program (usRAP) is available free of charge from the Roadway Safety Foundation. The foundation wants to work more closely with local agencies and is looking for opportunities to offer training, etc. The Safety Analyst tool will also include a new module in 2016 to support systemic safety analysis.

Analysis Approaches Session

The Gulf Coast metropolitan planning organization (MPO), Kentucky Transportation Cabinet (KYTC), and Alabama Department of Transportation (ALDOT) gave presentations on their analysis approaches. The following summarizes the information they shared as well as the roundtable discussion that took place after the presentations.

Mississippi

David Taylor, Gulf Regional Planning Commission (GRPC)

GRPC's mission is to reduce the likelihood of death or serious injury on Gulf Coast roadways by implementing infrastructure improvement projects, providing professional development training opportunities, and by increasing public awareness of and participation in safe travel strategies and practices. GRPC defines safety projects that stand alone from any other project, can be completed in a short amount of time, have minimal resource needs, will directly improve safety by reducing risk, and will benefit one or more roadway user groups. Examples of these types of projects include:

- Signalization
- Breakaway poles
- Median barriers
- Speed humps
- Rumble stripes
- Road diets
- Safety rest areas
- Pavement markings
- Impact attenuators
- Bulb outs
- Lane channelization
- Roundabouts
- Road lighting
- Guardrails
- Car/vanpooling
- Crosswalks/rest areas
- Warning signage
- Rail crossing closures

To focus their priorities, the Mississippi Department of Transportation (MDOT) and the MPO each selected 6 of the 22 National Safety Priorities identified by American Association of State Highway and Transportation Officials (AASHTO). Making infrastructure improvements is a major component of GRPC’s program. Their first priority is reducing roadway departure crashes at rural curve locations. They have used both a data-driven and systemic approach to identify high-risk locations. They also worked closely with county road managers to recommend improvements for 28 locations across 3 counties. Most roads are classified as collectors. The improvements will be financed using State Transportation Plan (STP) funds— 10 percent of their overall STP funds will go towards these safety improvements.

Education and awareness progress:

- The “Get to B” safety program was launched in 2015.
 - Event 1 – a 2-day workshop on innovative intersection designs
 - Event 2 – a half-day training session on roundabout site selection and design standards
 - Event 3 – field evaluation
 - Event 4 – discussed RWDs
- Launched a new website in August.
- Newsletter

Comment and Question Session

- Ben Colucci recommends letting press know about the Get to B Program.
- Montgomery County educates the engineers on pedestrian safety, etc. and that’s why they’ve had success with collision and fatality reductions.

Kentucky

Eric Green, Kentucky Transportation Center – University of Kentucky

The traditional approach to safety analysis was to perform a critical rate analysis. This involved comparing a section of road to an average section of road of a similar type. If the critical rate factor (CRF) was greater than 1, the road was classified as dangerous. If the crash data is not good, the analysis might not be accurate. The agency reviews paper collision reports, but this practice is decreasing as the Kentucky Transportation Cabinet (KYTC) has moved to electronic reporting and using GPS and GIS mapping.

Limits of critical rate analysis:

- Uses only collisions with county, route, and mile point – other collisions are excluded

- Uses cookie cutter lengths to find sections – it doesn't find the best section
- Collision reports are not correct all the time – read them carefully
- Sites with low AADTs tend to move to the top
- No accounting for sites with zero crashes
- Crash rates may be misleading

Comment and Question Session

- Does KY have resources in house for crash analysis?
 - KYTC has a Memorandum of Understanding (MOU) with the Kentucky Transportation Center (at the University of Kentucky). They help with data analysis.

Jarrod Stanley, Kentucky Transportation Cabinet (KYTC)

Fatalities and serious injuries are trending down in Kentucky. KYTC uses the university and consultants through on-call contracts for their data analysis. University of Kentucky provides data to KYTC to establish a prioritized list of projects on their roadway sections. In an effort to stretch available funds projects do not include the purchase of right-of-way or relocating utilities. For example, low cost safety improvements were applied to an 8-mile corridor for \$1.5 million. Horizontal alignment signing tends to be controversial with the public in Kentucky as residents prefer not to have signs on their property. Applications of High Friction Surface Treatment have shown crash reduction rates in the 90 percent range; this has proven to be a magic bullet for Kentucky. University of Kentucky developed a database of intersections with GIS.

Other HSIP initiatives include training. The KTC at the University of Kentucky developed a highway signing inspection class. Kentucky also has many safety initiatives not funded by HSIP, such as center line, edge line, and shoulder rumble strips.

Future initiatives

- Shoulder program: widen shoulders in sections of roadway that will be resurfaced in the next calendar year.
- Local governments: Kentucky's HSIP is in the beginning stages of aiding in the development of a roadway departure plan for the Lexington – Fayette Urban County Government
- Supporting daily use of the Highway Safety Manual (HSM) and Human Factors Guide into KYTC processes

Alabama

Tim Barnett, Alabama DOT

In Alabama, 39 percent of Rwd crashes occur on the State system, and 61 percent occur off the State system. Rwd crashes are infrequent events at specific locations. The risk of a reported crash is about three times greater on a curve than on a tangent.

Alabama developed a Rwd Plan that includes:

- Systemic deployment of low-cost, cost-effective countermeasures as a matter of policy
- Systematic application of low-cost, cost-effective countermeasures at comparable locations

- Education and enforcement initiatives
- Traditional spot improvements
- Employment of new countermeasures

Data indicates that 95 percent of RWD crashes in Alabama over-represented sites are within or at curves. The following are examples of recommended traffic control device countermeasures in Alabama's RWD Plan:

- Florescent yellow sheeting on all the signs
- Oversized curve signage
- Dual mounted advance curve signage
- Use of pavement markings and/or transverse rumble strips
- Sign post reflective sheeting strips
- Use of combination curve/turn signs and advisory speeds
- Combination curve and intersection signs
- Active devices such as beacons or speed feedback signs
- Dynamic curve warning systems

The following are examples of physical changes in the Alabama RWD Plan:

- Sight distance improvements
- Remove/relocate/shield fixed objects
- Slope and/or ditch reconfiguration
- High friction surface treatments
- Skid-resistant pavement
- Superelevation correction
- Roadway lighting and/or advance delineation
- Pavement widening
- Shoulder widening
- Modification of horizontal alignments (very limited application)

The following are examples of systemic RWD countermeasures used in Alabama:

- Safety widening of the roadway by 2 feet (since 2006)
- Rumble strips (since 2009)
- Median barrier and cable guide rails (late 90s)

RWD Plan Implementation - an in-depth road safety assessment will be undertaken for approximately 370 sites for potential use of enhanced signing/markings and approximately 435 sites for physical changes. About half of the sites overlap with each other, so in reality there are only around 400 specific sites to investigate.

Alabama plans to undertake the following activities for local road safety:

- Develop a program for local roads similar to the ones developed for State roads
- Improve the location information for crashes on non-State routes (improving with latitude/longitude for all crashes)
- Use electronic ball bank indicators

- Incorporate the RWD analysis program into the Critical Analysis Reporting Environment (CARE)
- Development of safety performance functions (SPF) for local roads
- Implement usRAP

Comment and Question Session

- Did you experience any issues with speed feedback signs?
 - They are observed for a while, but regular drivers start to ignore them. However, the signs are meant more for the drivers that do not drive that route every day and do not know the issues.
- Were rumble strips installed with 2-foot widening?
 - Yes. Bicyclists are not complaining because they now have a shoulder to use.
- What funding was used for the ball banks indicators?
 - ALDOT used HSIP funds to purchase the electronic ball bank indicators. The cost was \$5,000 each and they came with training and lifetime access to software and software upgrades.
- How much HSIP funds do you use on systemic safety improvements?
 - Spend 50 percent on systemic improvements; majority is 2 foot widening with rumble strips. The rest is for things like cable rail.

Roundtable Discussion on Analysis Approaches

- NJ, PA, KY have experience in using HSM.
- NJ integrating HSM into the project selection process. Developed partnerships to ensure there is training and workshops available, which has really helped. Want to convey value and how it leads to better decisions. NJ also performs an annual solicitation to get HSIP funding to locals. They asked locals to include HSM calculations in their applications and they got extra points for doing so. Number of locals including HSM calculations has increased. When it comes to the HSM calibration factors, New Jersey focuses more on whether there will be safety when applying treatments.
- AL putting together an RSA Manual and including HSM.
- TN just now starting to use the HSM. They have collected various types of information as they start to try and use the HSM, and are willing to share as needed.
- Maine has done some SPF calibration work.
- The HSM is data-driven and data heavy. Challenge in FL is that they have good crash data but not good roadway data. Need input on systemic safety using whatever data they have for local roads.
- KY is the same; they have plenty of crash data, but not roadway data. To help get roadway data for local roads they are using the usRAP program methodology. They are also rating the roadways' roadside hazards and getting the details to be able to perform the basic analyses.
- Montgomery County - GPS tied to accident reporting; real-time analysis will be possible with geocoding; the more you invest in the data, the better the decisions that can be made.

- The systemic safety analysis process helps you identify/prioritize the data you need. Don't have to always use quantitative data, can use qualitative data too (e.g., average annual daily traffic (AADT) = low, medium, or high).
- Using HSM for design exceptions – FL, ME, and AL are doing this (either institutionalized – ME and AL – or transitioning to being institutionalized – FL).
- FHWA has many resources available to support HSM implementation:
 - NHI workshops
 - FHWA workshops; recorded and online — can also be provided in person
 - Tools being developed by Turner-Fairbank Highway Research Center (e.g., Interactive Highway Safety Design Model (IHSDM))

Countermeasures Session

Florida, New Jersey, and Pennsylvania gave presentations on the systemic safety countermeasures being used in their States. Following is a summary of the information they shared as well as the roundtable discussion that took place after the presentations.

Florida

Peter Hsu, Florida DOT

The Florida DOT uses a design-build push button contract to more rapidly deploy low cost safety improvements. The benefits of the design-build push button contract include:

- Fast response
- Jobs creation
- Saving lives
- Customer service

In 2004, Florida DOT started discussing a new type of contract that would significantly reduce the amount of time to get a project from “concept to concrete.” Maximum time for push button is 10 months and design must meet the State’s standards.

The FDOT design-build push button contract process is as follows:

- Develop the request for proposal (RFP) (Traffic Operations office does this)
- Communicate with Contract, Design & Construction offices
- Prepare the Contract package (Professional Services office does this)
- Obtain approval from Legal office and the FHWA Division office
- Allocate State and/or Federal fund for the contract
- Decide the length of the contract
- Develop the initial projects in the first contract task for short listed teams
- Advertise the contract
- Select the short-list teams (3) to design those initial projects
- Rank and select the winning team using the “adjusted scores” approach
- Execute the contract. This is a 9+ month process!

The team with the lowest adjusted score is selected using a contract selection formula. To date, 150 projects have been implemented. For others to begin a similar process, identify the road blocks in your State law and talk to your agency management to get their support. Then obtain

a budget. Assign an energetic contract manager and support staff. FDOT has a website with more information.

New Jersey

Sophia Azam, New Jersey DOT

NJ is a focus State for pedestrians and intersections. A majority (60 percent) of fatalities occur on local roads. First systemic pilot program was with rumble strips. The DOT is currently working towards implementing an HFST and local roundabout systemic program. Goal is to install 1 roundabout per county.

Christine Mittman, North Jersey Transportation Planning Authority (NJTPA)

NJTPA provided design assistance for 12 projects in 2015. Seven to eight road safety audits (RSA) are performed per year. NJTPA safety program typically performs these at local request. Local agencies use the RSA recommendations to develop their projects.

The process to determine locations for installing center line rumble strips (CLRS) is as follows:

- Step 1 – Identify centerline crossover crashes using Plan4Safety
- Step 2 – Use county-wide centerline crossover crash stats to identify two roadway characteristic

Examples of recent systemic projects in NJTPA include:

- HFST – FY2014 project in Sussex County
- Center Line Rumble Strips and HFST – FY 2015 Ocean County Project

Newark is a pedestrian/bike focus city that developed a Pedestrian/Bike Safety Action Plan. The draft will be ready in a few weeks and then goes through approval process. The Plan will be posted on the NJTPA website. Aspects of the plan were borrowed from NYC's plan so they did not have to reinvent the wheel. Plan balances spot and systemic treatments and includes a toolbox. Counties carry out the projects.

Pennsylvania

Kevin Murphy, Delaware Valley Regional Planning Commission (DVRPC)

As focus state, PennDOT has safety plans for both intersections and roadway departures. The plans use a systematic approach with elements of a systemic process. Improvements installed in locations where they actually had data; even if just a tiny bit of data. So there is a history in most instances; it's not just based on risk. Intersection improvements include double up signing (left and right), and oversized signing. Roadway departure improvements include centerline and edgeline rumble strips (CLRS and ELRS) and cable median guide rail. With limited funds available, it is important to spend those funds in an efficient manner. One way to ensure that happens is to do a cost benefit analysis of the improvements selected. By performing a before and after crash analysis and applying the cost to society for each fatality, injury type, and property damage returned from the analysis, the benefit received from the improvement can be compared to the cost of implementing the improvement.

PennDOT District 6 has been working on a systematic approach to urban and rural intersections. Locations are identified through data analysis and strategies are low cost (\$1,000 to \$50,000) quick turnaround to allow for more applications of countermeasures to more locations. Improvements include:

- Doubled up (left & right) signing

- Oversized Signing with High-intensity Fluorescent sheeting
- Advance Sheet Name Sign on (W16-8) Intersection Warning Signs
- Retro reflective sign post panel
- Solar-powered, sign mounted beacons
- Replacement of additional Safety related signs within 500 feet of intersection, (e.g. Do Not Enter, One-Way, etc.)
- Two overhead primary signal head indications
- Supplemental nearside signal heads, if needed
- Back plates with retro-reflective borders
- Clearance interval check
- Pedestrian treatments, such as push button indicators and pedestrian countdown signal

Jeff Roecker, PennDOT

PennDOT is incorporating risk management data by reviewing tort liability payouts. Tort liability payouts have decreased since the 1990s due to more awareness in tort liability and improvements in highway safety; however, the largest payouts are pavement and drainage related. Risk management is a proactive approach that reduces the number of court cases *and* the number of fatalities and injuries.

PennDOT developed target areas to address largest payout areas, including:

- Signs and markings
- Pavement conditions
- Barrier/guiderail
- Fixed objects
- Sight distance
- Drainage/icy spots
- Pavement edge/shoulder drop offs
- Problem intersections

PennDOT also has a Customer Care Center and 800-FIX-ROAD. Must respond in 3 days and fix within 14 days. PennDOT is using tort liability payouts to target systemic improvements.

Roundtable Discussion on Systemic Countermeasures

- If you do not have funds to fix the issue, install signs to at least warn of the problem.
- What countermeasures working with systemic implementation:
 - Rumble strips
 - HFST
 - Cable barrier
 - Roundabouts – Improves safety for vehicles but can make it more difficult for pedestrians/bikes if not designed for their safety (for example, refuge islands as part of the deflection). This is even more true for multi-lane roundabouts. Quieter vehicles also cause issues for blind pedestrians using roundabouts.
 - Lighting – FL using this to improve pedestrian/bike safety. Montgomery County also looking at this, but slow to implement due to costs.
 - Transverse rumble strips

- Pedestrian countdowns
- Signs and markings; especially in rural counties
- There was some discussion about using warning signs for countermeasures (such as centerline rumble strips), which are needed for motorcyclists and first time drivers.
- Access management (e.g., median revision)
- Road Diets – Montgomery County is using them systemically; install where there is a speeding problem and higher concentration of pedestrian collisions. Florida is also using them, but would not classify them as systemic.
- Kentucky is using centerline and edge line rumble strips on two-lane roads. They install at least 10' lane clearance between the rumble strips. Alabama's clearance between each set of rumble strips is 9' 4".
- Packages of countermeasures on corridors
- Channelization of pedestrians
- Pedestrian refuge islands and enhanced crosswalks
- Opportunities (things to consider)
 - Policy
 - Management support
 - Audible pavement markings when there is no room for rumble strips
 - Job order contracting (not design build because this is not allowed by law in NJ) – talking about how to use this for low-cost projects. Will help with quick-fix safety needs. New Jersey is using this now for bridge maintenance.
 - Reflective strips on stop signs and warning signs - Alabama, Maine, Kentucky, Mississippi, Florida, and New Jersey are using this countermeasure.
 - Green paint in conflict zones instead of full-fledged bike lanes.
 - “Mumble Strips” – Maine piloted them, but saw issues with the pavement so stopped using; supposed to be more noise friendly.
 - Reflectorized signal backplates

Key Takeaways from Breakout Session – Regional and Local Perspectives

Puerto Rico

- FDOT D7 ideas; sharing with the locals (agency buys equipment and local maintenance staff installs)
- Exchange data with locals

Florida

- How AL uses usRAP to collect data
- Everyone has frustration with getting Federal funds to the locals

Pennsylvania

- MS – set aside 10 percent of MPO funds towards locally owned projects; key to at least get it started and gets money flowing to locals
- NJ – Local projects selection process that PA might copy

Kentucky

- Missing data for local roads
- Finding a champion at the county level; could be law enforcement; tie money to it to get that champion

Alabama

- Communicate information – the DOT letting the locals know what resources are available to help them
- Hold workshop for low-cost safety countermeasures
- usRAP is important for locals since they do not have the data to perform evaluations
- EDC Program is helpful to locals; locals would not be doing what they are doing without the EDC Program

Mississippi

- Training to locals

Tennessee

- usRAP Program is worth researching
- Looking into Local Road Safety Plans

Maine

- Funding allocation philosophy

Maryland

- Build partnerships with localities; work through the MPOs to build the partnerships with the localities
- Training workshops can also build those relationships
- Bringing Federal partners to the table to work on Federal roads that are commuter routes (for example)

PEER EXCHANGE PROCEEDINGS – DAY 2

Systemic Implementation on Local and Rural Roads

Maryland, Tennessee, and Mississippi gave presentations on the systemic implementation on local and rural roads in their States. Following is a summary of the information they shared as well as the roundtable discussion that took place after the presentations.

Maryland

Eric Tabacek, Maryland State Highway Administration (SHA)

MD is implementing systemic safety improvements including:

- Cable median barrier – motorcyclists don't like
- Rumble strips
- Traffic control device rehabilitation
- Pavement installation and improvement

- Edge line and centerline rumble strips
- Upgrading all pedestrian signals to audible/countdown pedestrian signals
- Durable pavement markings
- Fluorescent yellow green signing
- Pedestrian safety best practices – while they know they may have 100 pedestrians crossing at location and that there aren't any problems, they also should install countermeasures anyway so that no problems occur. It's a proactive approach.
- Maryland also uses work zone speed cameras. SHA makes sure the public knows it is a safety program not a money-making program. Maryland does not use HSIP funds for their work zone speed cameras.

Jeff Dunckel, Montgomery County

The pedestrian safety initiative is implemented in the county in coordination with State Police and State DOT. Montgomery County wanted a data-driven approach to reducing pedestrian crashes and has included pedestrian RSAs. The county is performing an assessment within a ¼-mile radius around every school (200 schools) and is implementing safety improvements around every school in the county. The county also implemented corridor safety improvements to calm traffic and is focusing on parking lots where 30 percent of collisions are occurring. After 5 years, data shows a reduction in fatalities.

Tennessee

Brian Hurst, Tennessee DOT

TDOT performs 150 RSAs per year, but only lets approximately 6 safety projects to make it a larger contract to get better bids. Tennessee is a RwD and Intersection Focus State. RwD accounts for 60 percent of Tennessee's fatalities. In addition, Memphis is a focus city for pedestrian/bike safety. TDOT estimates that implementation of the RwD Action Plan will prevent more than 2100 reported crashes and will save 570 lives over a 10 year period. The plan uses the systemic and comprehensive approach to reduce RwD fatalities. Since 2006, TDOT has installed over 300 miles of cable rail. Through the Fatality Reduction Safety Initiative, TDOT identified seven roads with at least three fatal crashes in the past 3 years to implement safety countermeasures. TDOT has used microsurfacing, but not sure they will continue based on benefit cost numbers they are currently seeing.

One safety strategy in the Intersection Action Plan is to use double signs. Double signs are not for the everyday driver, but those not familiar with the road or for young drivers. Localities do not like flashing beacons because the locals do not want to maintain them.

Wrong way safety initiative is trying to reduce 229 crashes annually; TN is currently sustaining 56 fatalities and 173 serious injuries from 2010-2014.

As part of the shoulder widening initiative, TDOT developed criteria that are prioritized by the number of fatal and incapacitating roadway departure injury crashes on rural State routes with a less than 2-foot shoulder and a minimum speed limit of 45 MPH.

TDOT's standard for traffic signals now is to use retroreflective back strips. Other safety measures being applied systemically include the use of edge-line, shoulder and center-line rumbles, snow plowable pavement markers, and SafetyEdge.SM.

Mississippi

Mark Thomas, Mississippi DOT

State maintains 15 percent of the roadway miles. Systemic policies include:

- Two-foot shoulders on all MDOT-maintained routes
- Rumble strip/stripe – first State to use the rumble stripe; gives additional reflectivity. Stripe and strip are policies. SafetyEdgeSM is also a policy on all of MDOT projects.

Systemic Activities include:

- Cable barrier – currently have 330 miles installed
- Centerline rumble strips – maintenance forces don't like them
- Tree clearing

Examples of systemic projects include:

- Districtwide intersection improvement
- Cable barrier installation

MS also has a Safety Circuit Rider Program

- Program includes presentations/training, a sign program, and design projects.
- As part of the Sign Program, they give locals signs for free and local agency staff installs them. The funding comes out of the State's traffic engineering budget. Does not use HSIP funds (materials are an eligible HSIP expense, but it is the FHWA District Administrator's discretion). Just started in October 2014 so do not have a full year yet. (NJTPA would like more information on this program.)
- Design Projects – Sometimes they are packaged individually and the State runs them, some are packaged with two county projects together.

Roundtable Discussion on Systemic Implementation on Local and Rural Roads

- Consider prioritizing systemic treatments based on the capabilities of vehicles (such as lane guidance assist technology in cars which can see pavement markings and let drivers know if they are leaving their lane). There are transition issues to consider for drivers who get used to the technology in their car and then drive a rental vehicle that does not have it.
- One State would like to pursue a Human Factors Peer Exchange. FHWA mentioned that a 2-day human factors training course will be available in the fall through National Highway Institute.
- One State mentioned that it would like to get more HSIP funding down to the locals.
- Puerto Rico asked if HSIP funds are being used to fund an employment position; Connecticut uses HSIP funds to fund their Safety Circuit Rider position. Donna Shea can help with questions about that process.
- Low-cost improvements are also low-risk projects.
- Another obstacle is the procurement process locals have to go through to use Federal funds.
 - Workaround is to look at contracts on a regional basis; localities can come together to have one contract.

- In some states, localities need to have a project worth more than \$100k or \$150K to try to get Federal funds, or it's not worth the time and resources. It is considered a waste of time to get Federal funds for small projects.
- In New Jersey, the environmental office develops the environmental documents for the locals to support their projects.
- Locals need to work with their associations (National Association of County Engineers, National Association of Counties, American Public Works Association) to work on proposed changes in the law.

Key Takeaways from Funding Breakout Session

Puerto Rico

- Can work more effectively with local jurisdictions.
- Will work with the Planning Section to get them on board with safety.

Alabama

- Needs to spend its safety funding. Still transferring HSIP funds. The issue is that decision makers have made decisions to take funds and use them elsewhere, not that they cannot spend it fast enough. KY is transferring funds that then got used for rehabilitation.

Kentucky

- Learned how other States have portioned their funds (out) to local governments.

Florida

- Safety is one component of a transportation department; challenge is that there is not a balanced funding approach. Need to look at the benefit of the project to the road user. There needs to be benefit/cost analysis. Virginia DOT is required by law to perform a benefit-cost analysis for all of their safety projects.
- Will look into transferring funds to the behavior side to increase education.

Pennsylvania

- Spending a majority of their safety funds, but they are going mostly (95 percent) to State-maintained roads. Need to get more funds to the locals.

Tennessee

- Need to keep local partners at the table.
- Keep all roads in mind; that is the only way to drive down the fatalities.

Mississippi

- Likes how TN implements their local road projects.

Maryland

- Needs to get funding to the locals.
- Has applied all of the low-cost safety countermeasures; what is happening is congestion-related and will be expensive to fix. It is hard to get funding for those projects.
- Cost-benefit data may help with getting the funds and making the argument, but congestion projects are often viewed as a capital project, which must go through a different process.

Maine

- Cannot forget the reactive activities when focusing on proactive systemic safety.
- Need to think about how much to allocate for local systemic activities and how much to manage the local road opportunities.

New Jersey

- Will use HSIP funds for systemic projects.
- If capital project is on the priority list, it will try to fund it with safety funds.
- Try to provide 50-60 percent of funding to locals.

ACTION ITEMS

- Work closely to exchange data with local agencies to develop and keep local partners, find and develop champions, communicate available resources, work more effectively, and find ways to get more Federal funds to these agencies.
- Utilize the usRAP program as a potential solution for improving data-driven decisions.
- Advance systemic safety by hosting workshops for low-cost safety improvements, providing guidance, providing training, and/or identifying funding for local agencies and jurisdictions, which also helps to build relationships with locals.
- Identify funding opportunities for local agencies by:
 - Reassessing different countermeasure costs and benefits,
 - Revisiting how funds are allocated for local systemic activities and how funds are managed for local road safety improvement opportunities,
 - Considering using HSIP funds for systemic projects,
 - Using a priority list to allocate safety funds on capital projects, and
 - Considering providing 50-60 percent of funding to locals.
- Develop local road safety plans.

ACTION PLANS

Attendees divided into their State delegations and created a list of actions they would undertake as a result of the information learned during the peer exchange. Below is a summary of each State's strategies for advancing systemic safety.

Alabama

- Create a Safety Circuit Rider Program.
- Roll out an HSIP Guidance Memo at the Local Roads Conference during October 6-8. Will discuss usRAP at the same event.
- Regional Drivers Ed Program will be expanded to the county level.
- Rumble Strip policy and HFST policy – continue with these types of policies.
- Hold an Executive Safety Summit. Sell the need for systemic safety to executives; locals need to be at the table for this event.
- Small town intelligent transportation systems (ITS) – provide traffic engineering services to small cities that don't have a city engineer to time their signals for them.
- Develop program for using reflective signal backplates.

Florida

- Data – mining/inventory, determine what needs are, obtain the data
- Process – conduct desktop research on best practices, develop guidance, provide training
- Implementation – perform training/communication and outreach, encourage mentoring, discuss appropriate contract methods

Kentucky

- Sort highest to lowest by percentage of Rwd to identify focus counties
- Use LTAP to approach counties and help them develop a LRSP
- LRSP will be submitted to KYTC to obtain funding for projects
- Will get crash data from University of Kentucky

Maine

- Continue strategies for rumble strips to decrease head-on crashes; add into planned projects
- Work on run-off-road crashes—identify risk factors
- Work on funding philosophy, convince executive branch to be proactive
- Work on wrong-way driving strategy
- Continue using retroreflective signal backplates and strips on signs
- Work on pedestrian/bike issues and get data to address this group

Maryland

- Hold executive-level meetings to gain support for HSIP funds to be used for local projects and for funding more expensive improvement projects after implementing low cost safety improvements if crashes are still occurring.

Mississippi

- Expand analysis capabilities. Find someone who can help the DOT dig into the data deeper so we're not picking spots at random.
- Look into alternative contracting methods (like job order contracting).
- Increase funding to the local roads.
- Work with Districts to help them apply countermeasures districtwide.

New Jersey

- Get off the Focus State List. Focus data analysis on intersection and pedestrian needs the State has and where the opportunities are to implement bigger projects. Will need design assistance and increased network screening.
- IDEA — Use grassroots organizations to carry messages to executive leadership.

Pennsylvania

- Target local municipalities more
- Use risk factors more with systemic safety (not just crash data)

- Partner with metropolitan and regional planning organizations to implement local road safety plans
- Work on getting roadway data

Puerto Rico

- Conduct an analysis of systemic safety measures in Puerto Rico
- Implement countermeasures
- Use technology transfer; peer exchanges
- Evaluate effectiveness of the measures

Tennessee

- Focus more on the local level
- Teach the local level “how to fish”—develop training opportunities
- Continue Local Road Safety Initiative, but evaluate it and see how it can be improved
- Bring in more RSA training and make sure the locals know how to perform RSAs
- Look at shorter formats for training and increase local participation

APPENDIX A – LIST OF ATTENDEES

Name	Agency
Waymon Benifield	Alabama DOT
Tim Barnett	Alabama DOT
Richie Beyer	Elmore County
Benjie Sanders	Crenshaw County
Tom Sisco	Huntsville
Linda Guin	FHWA-Alabama
Joe Santos	Florida DOT
Peter Hsu	Florida DOT - District 7
John Goodnight	Florida LTAP
Khoa Nguyen	FHWA-Florida
Jarrold Stanley	Kentucky Transportation Cabinet
Eric Green	Kentucky Transportation Center – University of Kentucky
Martha Horseman	Kentucky Transportation Center – University of Kentucky
David Durman	Kentucky Transportation Cabinet
Rhonda Fletcher	Maine DOT
Steve Landry	Maine DOT
Duane Brunell	Maine DOT
Matthew Philbrick	Maine DOT
Dianne Rice	BACTS (Bangor Area Comprehensive Transportation Systems)
Brian Lawrence	FHWA-Maine
Eric Tabacek	Maryland State Highway Administration
Erin Kuhn	Maryland State Highway Administration District 4
Bala Akundi	Baltimore Metropolitan Council
Jeff Dunckel	Montgomery County Department of Transportation
Breck Jeffers	FHWA - DelMar Division (Maryland Office)
Mark Thomas	Mississippi DOT TED Jackson
Murry Stewart	Mississippi DOT TED Jackson
David Taylor	Gulf Regional Planning Commission/MS Gulf Coast MPO
Andy Swims	Desoto County Planning Commission
Terry Bridges	FHWA-Mississippi
Sophia Azam	New Jersey DOT
Angela Quevedo	New Jersey DOT
Sascha Frimpong	North Jersey Transportation Planning Authority
Christine Mittman	North Jersey Transportation Planning Authority
Caroline Trueman	FHWA-New Jersey

Name	Agency
Lou Ferretti	Pennsylvania DOT
Christian Goetz	Pennsylvania DOT
Kevin Murphy	Delaware Valley Regional Planning Commission
Jeff Roecker	Pennsylvania DOT
Mike Castellano	FHWA-Pennsylvania
Alexis Nevárez	Puerto Rico Highway and Transportation Authority
Mario Maldonado	Puerto Rico Traffic Safety Commission
Benjamin Colucci	LTAP
Kenneth Vélez	University of Puerto Rico/CARE
Andres Alvarez	FHWA-Puerto Rico
Steve Allen	Tennessee DOT
Brian Hurst	Tennessee DOT
John Sexton	Knox County
Matt Cate	Tennessee Transportation Assistance Program
Sabrina David	FHWA-Tennessee
Jessica Rich	FHWA-Tennessee
Rosemarie Anderson	FHWA Headquarters
Karen Scurry	FHWA Headquarters
Keith Sinclair	FHWA Resource Center
Heather Rigdon	Leidos (contract support)

APPENDIX B – AGENDA



Systemic Safety Implementation Peer Exchange

EDC3 Data-Driven Safety Analysis Initiative

September 15-16, 2015

AGENDA

Participating States:

Alabama, Florida, Kentucky, Maine, Maryland, Mississippi, New Jersey, Pennsylvania, Puerto Rico, Tennessee

Tuesday, September 15

8:00 AM Welcome

- Steve Allen, Director, Strategic Transportation Investments, Tennessee DOT
- Sabrina David, Assistant Division Administrator, FHWA Tennessee

Peer Exchange Objectives
Introductions/Expectations

9:00 AM Overview of Systemic Approach to Safety

- Keith Sinclair, FHWA Safety & Design Technical Services Team
- Karen Scurry, FHWA Office of Safety

10:00 AM Break

10:15 AM State Presentations: Analysis Approaches

- "Getting to B" Program – David Taylor, Gulf Coast MPO
- Implementing the HSM & HSIP in Kentucky – Eric Green, KY Transportation Center; Jarrod Stanley, KY Transportation Cabinet
- Status of Roadway Departure Crashes in Alabama – Tim Barnett, ALDOT

11:30 AM Lunch on your own

12:30 PM Roundtable Discussion: Analysis Approaches

Analysis tools and resources being utilized by state and local agencies to implement systemic safety

1:15 PM State Presentations: Systemic safety countermeasures

- Design Build Push Button Contract – Ping P. Hsu, FDOT
- Implementing Systemic Safety Countermeasures – Sophia Azam, NJDOT
- Benefit-Cost Analysis for Systemic Countermeasure Decision-Making – Jeff Roecker, PennDOT; Kevin Murphy, DVRPC

2:15 PM BREAK

2:30 PM Roundtable Discussion: Systemic Countermeasures

Countermeasures currently being used by states and local agencies for systemic safety implementation; other countermeasures agencies should be considering; benefits and challenges of implementation



Systemic Safety Implementation Peer Exchange

EDC3 Data-Driven Safety Analysis Initiative

September 15-16, 2015

- 3:30 PM **Breakout Discussion by State(s): Regional & Local Perspectives**
Engaging local and regional agencies in systemic safety approach. Discuss the successes and challenges and addressing the challenges.
- 4:30 PM **Report Back (Key Takeaways)**
- 5:00 PM **Wrap-up/Adjourn**

Wednesday, September 16

- 8:00 AM **Recap of Day 1**
- 8:30 AM **State Presentations: Advancing Implementation of Systemic Safety Improvements**
- Systemic Countermeasure Implementation, Maryland's Targeted Approach – *Eric Tabacek, MD SHA*
 - Implementing Safety Improvements – *Brian Hurst, TN DOT*
 - Systemic Safety Implementation Lessons Learned – *Mark Thomas, MS DOT*
- 9:30 AM **Roundtable Discussion: Implementation**
Opportunities and challenges to systemic safety countermeasures implementation; strategies to overcome challenges and the role of regional and local agencies
- 10:15 AM **Break**
- 10:30 AM **Breakout Discussion: Funding Sources**
Determining the right balance between spot and systemic safety improvements; developing systemic safety implementation plan on yearly/funding cycle basis; identifying funds to be used in implementation
- 11:30 AM **Report Back (Key Takeaways)**
- 12:00 PM **Lunch on your own**
- 1:00 PM **State Breakout Discussions: Action Plans**
- Including Roles and Responsibilities
- 2:15 PM **Report Back**
- 2:45 PM **Wrap-up/Next steps**
- 3:00 PM **Adjourn – Safe travels!**

APPENDIX C – ADDITIONAL RESOURCES

Following are resources that are available to assist agencies with implementing systemic safety:

- Systemic training and technical assistance program – see <http://safety.fhwa.dot.gov/systemic/training.htm>. The Technical Assistance Online Application can be found at https://rspcb.safety.fhwa.dot.gov/p2p/p2p_app.aspx.
- FHWA has multiple resources available including a Systemic Safety Project Selection Tool and technical assistance. FHWA also coordinates peer exchanges and webinars. There will be a webinar series in 2015 to allow States participating in the Eastern and Western Systemic Safety Peer Exchanges to share information between each other. For detailed information on FHWA's resources, visit <http://safety.fhwa.dot.gov/systemic/index.htm>.
- Strategic Highway Safety Plans (Emphasis Areas are identified in these plans). More information may be found at <http://safety.fhwa.dot.gov/hsip/shsp/>.
- Intersection and Roadway Departure Safety Implementation Plans. More information may be found at http://safety.fhwa.dot.gov/roadway_dept/.
- US Road Assessment Program (usRAP). More information may be found at <http://www.usrap.us/home/>.
- Safety Analyst – There will be a new module in 2015 to support systemic safety analysis.